

What is claimed is:

- 1 1. A method to assemble a capacitor plate to one side of a substrate having a first
2 side and a second side, and a first electrical contact area on said first side, and a second
3 electrical contact area on said second side, comprising:
4 connecting a component to said first electrical contact area on said first side of
5 said substrate; and
6 connecting said capacitor plate to said second electrical contact area on said
7 second side, opposite said first electrical contact area on said first side of said substrate.
- 1 2. The method of claim 1, further comprising:
2 attaching a first interposer to said first electrical contact area on said first side of
3 said substrate;
4 attaching said component to said first interposer on said first electrical contact
5 area on said first side of said substrate;
6 attaching a second interposer to said second electrical contact area on said
7 second side of said substrate; and
8 attaching said capacitor plate to said second interposer.
- 1 3. The method of claim 2, wherein said first interposer and said second interposer
2 are chosen from a group of interposers consisting of: a socket, or a conductive
3 elastomeric material.
- 1 4. The method of claim 1, wherein said component is chosen from a group of
2 components consisting of: a land grid array (LGA) component, or a ball grid array
3 (BGA) component.
- 1 5. The method of claim 1, wherein said substrate is chosen from a group of
2 substrates consisting of: a printed circuit board (PCB), a multi-chip module (MCM),
3 and a flexible substrate.

- 1 6. The method of claim 1, wherein said capacitor plate comprises:
2 a plurality of conductive planes; and
3 one or more dielectric layers to separate said plurality of conductive planes,
4 wherein said one more dielectric layers include a material consisting of: FR4, a resin,
5 an elastomeric material, or a ceramic.

- 1 7. The method of claim 1, wherein said capacitor plate is attached by solder to said
2 second electrical contact area on said second side of said substrate.

- 1 8. A method to fabricate a capacitor plate, comprising:
2 selecting a set of physical specifications of said capacitor plate;
3 estimating an initial required capacitance for a plurality of contacts on said
4 capacitor plate;
5 modeling said capacitor plate after assembly on a substrate;
6 estimating a more precise required capacitance for said plurality of contacts on
7 said capacitor plate after modeling said capacitor plate after assembly on said substrate;
8 and
9 fabricating said capacitor plate according to said set of physical specifications.

- 1 9. The method of claim 8, wherein said capacitor plate includes one or more layers
2 including a material consisting of: FR4, a resin, an elastomeric material, or a ceramic.

- 1 10. The method of claim 8, wherein said capacitor plate includes soldering pads for
2 soldering said capacitor plate to said substrate.

- 1 11. The method of claim 8, wherein said capacitor plate comprises:
2 a plurality of conductive power planes; and
3 a plurality of conductive ground planes, wherein said plurality of conductive
4 power planes and said plurality of conductive ground planes are separated by one or
5 more dielectric layers including a dielectric layer chosen from the materials consisting
6 of: FR4, a resin, an elastomeric material, or a ceramic.

1 12. The method of claim 8, wherein said capacitor plate has one or more layers of
2 dielectric material with a relative permittivity greater than 4.

1 13. An assembled substrate, comprising
2 a substrate having a first side and a second side, and a first electrical contact
3 area on said first side and a second electrical contact area on said second side;
4 an electrical component having a plurality of leads electrically connected to said
5 first electrical contact area of said substrate; and
6 a capacitor plate electrically connected to said second electrical contact area on
7 said second side of said substrate substantially opposite said first electrical contact area
8 of said substrate.

1 14. The assembled substrate of claim 13, wherein said assembled substrate further
2 comprises:
3 a first interposer between said component and said first electrical contact area
4 on said first side of said substrate; and
5 a second interposer between said capacitor plate and said second electrical
6 contact area on said second side of said substrate.

1 15. The assembled substrate of claim 14, wherein said first interposer and said
2 second interposer are chosen from a group of interposers consisting of: a socket, or a
3 conductive elastomeric material.

1 16. The assembled substrate of claim 13, wherein said substrate is chosen from a
2 group of substrates consisting of: a PCB, a MCM, and a flexible substrate.

1 17. The assembled substrate of claim 13, wherein said component is chosen from a
2 group of components consisting of: a LGA component, or a BGA component.

1 18. The assembled substrate of claim 13, wherein said capacitor plate has a plurality
2 of layers of dielectric material separating a plurality of layers of conductive material.

1 19. The assembled substrate of claim 13, wherein said capacitor plate comprises:
2 a plurality of conductive power planes; and
3 a plurality of conductive ground planes, wherein said plurality of conductive
4 power planes and said plurality of conductive ground planes are separated by one or
5 more dielectric layers including a dielectric layer chosen from the materials consisting
6 of: FR4, a resin, an elastomeric material, or a ceramic.

1 20. The assembled substrate of claim 13, wherein said capacitor plate is attached by
2 solder to said second electrical contact area on said second side of said substrate.